

A NEW SPECIES OF *STENAMMA* (HYMENOPTERA:
FORMICIDAE) FROM UTAH

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ABSTRACT.— *Stenamma knowltoni* is described as a new species from various localities in northern Utah and southern Idaho. The new species falls clearly into the large-eyed group of M. R. Smith's monograph of *Stenamma*.

Recently a number of excellent collections of ants from Utah were received, and I am indebted to Dr. George F. Knowlton for these specimens. Among the numerous vials are examples of a new species of *Stenamma* which is herewith described.

Stenamma knowltoni, sp. nov.

WORKER.— Length, 3.36 mm; head length (excluding mandibles), 0.86 mm; head width, 0.76 mm; head index, 0.884; thorax length, 1.056 mm.

Head distinctly longer than broad, subrectangular in shape; occipital border flat, occipital corners definite but rounded, sides of head straight and parallel; median lobe of clypeus elevated and produced forward, anterior border denticulate, and lateral lobes receding diagonally to mandibular insertions; frontal area depressed, triangular; frontal carinae parallel in front, slightly divergent behind, and lobes partially covering antennal insertions. Antennae 12-segmented, funicular segments 2-6 very slightly broader than long, last four segments forming a club whose terminal segment almost equals in length two preceding it; scapes fail to reach occipital corners by an amount less than length of funicular segment 1. Eyes very large for a *Stenamma*, with about 12 facets across greatest diameter, approximately 70 facets in entire eye; eyes placed a little anterior to middle of head from occiput to mandibles, and measuring 0.165 mm in diameter. Mandibles bear seven teeth gradually reduced in size from apex to basal border.

Thorax moderate in width, humeral angles rounded, dorsal surface in profile gently convex, and meso-epinotal impression distinct but shallow. Epinotal base coordinate with plane of promesonotum, but sloping downward and backward to spines. Epinotal spines short (0.033 mm and half as long as their interbasal distance), triangular sharp, and pointing abruptly upward. Epinotal declivity vertical. Petiolar node rounded, subconical, wider than long from above, peduncle long, slender and constricted; in profile anterior face of node sloping but distinct from peduncle; ventral surface of petiole straight and furnished with a minute spine at anterior end. Post-petiole globular from above, as wide as long; in profile convex above, flat below. Gaster of usual myrmicine shape, first segment occupying most of this tagma.

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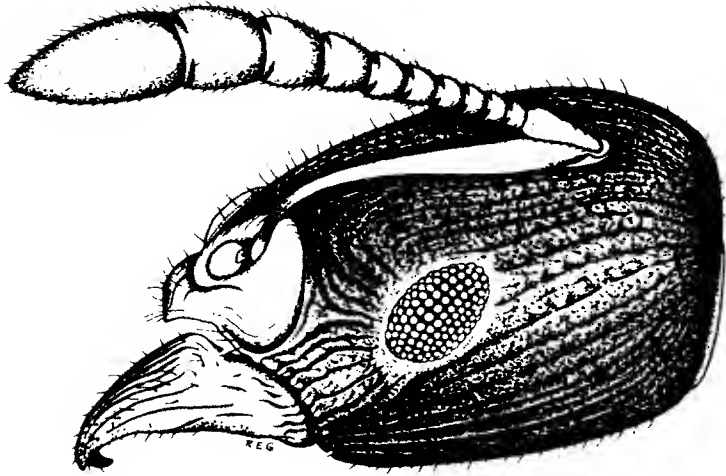


Fig. 1. Head of *Stenamma knowltoni* Gregg.

Sculpture: Head covered with longitudinal rugae, becoming vaguely reticulate on posterior portion; interspaces rather coarsely punctate, general appearance opaque to subopaque, or at most only slightly shining. Clypeus with multiple carinulae. Mandibles finely rugulate or striate, with widely spaced punctures, and shining. Dorsum of thorax longitudinally rugose, rugae widely spaced, but with a few transverse rugae at anterior end. Pronotal collar punctate. Pronotum lightly punctate, mesonotum heavily punctate between rugae. Epinotal base punctate, declivity smooth and shining. Propleurae almost devoid of rugae, smooth and shining; mesopleurae coarsely punctate especially in lower half, opaque; epinotal pleurae rugose and coarsely punctate. Petiole and postpetiole more finely punctured dorsally and laterally, postpetiole having in addition coarse longitudinal rugae on its dorsolateral aspect. Gaster smooth and shining (faint shagreening), and with extremely short but distinct basal striae. Whole insect opaque to subopaque, except gaster, epinotal declivity smooth and shining, and pronotal dorsum and extreme occipital border quite shining despite their sculpturing.

Pilosity: Delicate, rather long, pointed yellowish hairs on all parts of body including appendages. Hairs uneven in length, shorter and numerous on head, longer and sparser on thorax, pedicel, and gaster.

Color: Head and gaster dark brown, thorax and pedicel slightly lighter and with reddish tinge. Legs, antennae, mandibles, clypeus, and pronotal collar light reddish brown.

FEMALE (deälate).—Length, 4.4 mm; head length (excluding mandibles), 0.92 mm; head width, 0.79 mm; head index, 0.857; thorax length, 1.32 mm.

Similar to the worker in most respects except size and proportions of thorax. Eye very large, 16 to 17 facets in greatest diameter, and with a total of 135 to 140 facets. Ocelli distinct, not protuberant. Scape fails to reach occipital border by an amount less than length of funicular joint 1, and is similar in other respects to that of worker.

Sculpture like that of worker in most details, but differing in that promesonotum has more widely spaced rugae with fewer punctures and therefore a more shining surface; propleurae rugose but interspaces shining and without punctures; mesopleurae rugose dorsally, almost sculptureless and shining ventrally; epinotal pleurae with strong wavy rugae, few punctures, and shining. Base and declivity of epinotum without sculpture and strongly shining. Petiolar and postpetiolar nodes rugose. Epinotal spines longer, proportionately more slender than in worker, and blunt at tips. Fore coxae rugose. Color and pilosity very similar to that of worker.

DISCUSSION.— A single alate female among the material sent to me was compared to figures of the wing venation given by Smith (1957) on page 137. The venation of the anterior wing of this specimen fits precisely that shown for Figure 2, a female of *brevicorne*, and thus belongs to the "*brevicorne* type," as designated by Smith, for it possesses one submarginal cell only in addition to the discoidal, and this condition is produced by the disappearance of vein r-m. Mf3 and Mf4 are retained. The pattern of venation is thus consistent with other characters which cause the new species (*knowltoni*) to key out to the couplet separating *brevicorne* and *meridionale*.

When Dr. Smith monographed the genus *Stenamma* he distinguished and described eleven species, and among these described three as new. These ants are small, slow moving, soil and litter species, secretive in habits, and generally not easily noticed in their normal habitats. The total number of forms known is small (less than 30 for the world according to Smith) and mostly Holarctic in their general distribution. No new species in the United States fauna have been discovered since Smith wrote, but the recent specimens from Utah prove to be a heretofore unknown form and quite distinct from any of those recognized previously. Smith went to some pains to divide the group into species with small eyes and those with large eyes, but this is only partially satisfactory; for, while it is convenient, there is enough gradation in eye-size from the smallest to the largest that no sharp break occurs among the forms on this basis alone. Nevertheless, it is a useful procedure, and anyone wishing to identify these ants must consider this character. In Smith's key the new species comes out on the "large eye" couplet (5 - 12 ommatidia), and then runs to the alternate separating *brevicorne* from *meridionale*. All of the very small-eyed species are therefore easily eliminated, but of the remainder several require that careful distinction be made. To judge from the characters given, *knowltoni* might be confused with *huachucanum* because of a somewhat bicolored appearance, but can be separated on the basis of its sculpture which is longitudinally rugose rather than punctulate, the epinotal spines

which are not tuberculate or vestigial as in *huachuacanum*, the petiolar node which is not unusually high, and the presence of basal gastric rugulae or striae. *S. carolinense* has one of the largest eyes of any of the species (10 - 12 facets in greatest diameter), but it also has transverse pronotal and mesonotal rugae, a more pronounced meso-epinotal impression, and extremely blunt tuberculate spines, all of which traits differ from *knowltoni*. *S. brevicorne* has a large eye but only 8 to 10 facets across its greatest diameter. Further, it has a strong meso-epinotal impression, and the epinotum is furnished with a distinct transverse welt immediately behind the impression. The epinotal spines are relatively long and sharp. The whole aspect of the insect is subopaque with coarse longitudinal rugulae on the dorsum of the promesonotum, and the color of the body is reddish brown with the gaster light at the base. *S. meridionale*, also among the larger-eyed species, has, again, only 8 to 10 ommatidia in the greatest diameter. The meso-epinotal impression is pronounced, but an epinotal welt is lacking. Epinotal spines are large, digitiform (Smith), and sharp. The petiolar node is antero-posteriorly compressed and rather quadrate from above (not conical), and the post-petiole is subcampanulate (not oval).

HOLOTYPE.—Worker, in the author's collection. **PARATYPES:** four workers and one dealate female deposited in the author's collection. These four workers and one queen were collected in mossy sagebrush duff at Cedar Creek Junction, near Kelton Pass, Box Elder Co., Utah, on 16 April 1969, by George F. Knowlton. The species is dedicated to Dr. Knowlton who has generously given me many fine series of ants from various localities in Utah. Additional paratype material also collected by Knowlton is available as follows: one worker, sagebrush duff, Kelton Pass, Box Elder Co., Utah, 1 May 1969; six workers, rangeland, Cedar Creek, Box Elder Co., Utah, 1 April 1969; seven workers, dead grass, Kelton Pass, 5000 feet, Box Elder Co., Utah, 16 April 1969.

Specimens belonging to the new species but not part of the type material were found by Knowlton at the following stations: three workers, sagebrush duff in canyon, 6 miles east of Holbrook, Oneida Co., Idaho, 16 April 1969; four workers, juniper duff, desert, 10 miles southwest of Twin Springs, Elmore Co., Idaho, 1 November 1969 (#389); two workers, greasewood duff, southeast of Black Pine, Oneida Co., Idaho, 18 October 1969 (#354); two workers, sagebrush duff, Holbrook Summit, 6115 feet, Oneida Co., Idaho, 22 October 1969 (#359); one alate female, desert biome, Curlew Reservoir, Curlew National Grassland, Oneida Co., Idaho, 22 October 1969 (#367).

Specimens of *Stenamma knowltoni* have been deposited in the collections of W. S. Creighton and the United States National Museum.

Before undertaking the description of this new species, I submitted specimens to Dr. Creighton who was able to compare them with examples of all known North American species of *Stenamma* (including the little known *foveolocephalum*), except *carolinense*. I am indebted to him for confirming my supposition that *knowltoni*

represents a new species. He also drew my attention to a curious situation in Smith's paper concerning eye-size in *Stenammina*, which could be a potential hazard to anyone not aware of it. I take the liberty to quote from his letter: "Cushman is a fine illustrator and his figures can be trusted implicitly, but this is not the case in the four outline drawings (5,6,7,8) on page 143 of Smith's monograph. I am ready to agree that these figures are not drawn to the same scale. *S. huachucanum* and *impar* are much smaller ants than *occidentale* and *schmitti*. But in Smith's descriptions you will find that in all four the maximum diameter of the eye is given as 0.10 mm. Furthermore, the number of ommatidia across the greatest diameter of the eye is closely similar for all four species; *huachucanum* 5-7, *impar* 5-6, *occidentale* 4-6, *schmitti* 4-6. In short, they are all small-eyed species. In my opinion the eyes of *schmitti* are shown as too small and those of *impar* and *huachucanum* as too large. On the basis of the figures, however, one would wonder why *impar* and *huachucanum* were not brought out on the key split with the large-eyed species. The only one of the four figures in which the eye-size is correctly shown is *occidentale*."

Despite the use of eye-size by Smith as a convenient method for grouping the species of *Stenammina*, it appears that he relied heavily upon thoracic sculpture in his revision. The extremely detailed and accurate rendering of this sculpture by Cushman greatly facilitates the separation of these species. I have indicated above how *knowltoni* differs from its most closely allied species, but it is well to emphasize here that its thoracic sculpture differs markedly from almost all the other forms of *Stenammina*. The dorsum of the thorax is longitudinally rugose for the most part, with a few transverse rugae anteriorly, and the only species with which it might be confused are *impar* and *brevicorne*. Of these two ants, however, the former has very small eyes and the latter has intermediate sized eyes as well as other differences.

Finally, although eye-size will continue to be a useful character in the taxonomy of *Stenammina*, it should be stressed that no clear-cut distinction is possible between a small-eyed and a large-eyed group of species. This can be demonstrated by expressing the eye-size for all species, as Smith has done, in terms of the number of facets in the greatest diameter, as follows: *heathi*, *sequoiarum*, *impar*, *discolor*, *schmitti*, and *occidentale* 4-6; *huachucanum* 5-7; *forcolocephalum* 7-8; *brevicorne* and *meridionale* 8-10; *carolinense* and *knowltoni* 10-12.

REFERENCES

- Czuczajda, W. S., 1961. The ants of North America. Bull. Mus. Comp. Zool., 124:1-247, pls. 1-8, 148-Pl. 17, fig. 1-20.
SMITH, G. A., 1967. Revision of the Genus *Stenammina* Westwood in America North of Mexico. Amer. Midl. Nat., 57:133-174.